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ESTIMATING ENEMY LOGISTICAL REQUIREMENTS DURING THE KOREAN WAR

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I. Introduction

A review of studies made during the Korean War of the logistical requirements of enemy forces illustrates the difficulty of accurately estimating an enemy's supply requirements. At times the ethereal nature of the problem reminds one of economists imputing the rent of owner-occupied grass huts when computing the GNP of an underdeveloped African country.

In these studies the first US estimates of North Korean logistical requirements were based largely on scaled-down US field manual standards. Field manuals* supply numerous data about daily requirements of US forces for all classes of supply, by geographic areas, and for different combat situations. However, Field manual standards tend to have a static quality that suggests they are frequently more appropriate for training exercises than new combat situations. Thus, in each new war or a rapidly escalating war, as was the case early in the Korean War, it is likely that an army commander is uncertain whether field manual standards accurately reflect his own requirements much less the requirements of the enemy. For example, a 1949 edition of FM 101-10 estimated US Class V requirements at 5.14 pounds per man per day. Yet, the 1959 edition, which supposedly reflected the experiences of both World War II and the Korean War, still retained the earlier estimate.

* For example, FM 101-10, Staff Officers' Field Manual Organization, Technical and Logistical Data.

A study of the Korean experience indicates that only over time and by use of a large number of techniques and sources can accurate estimates of enemy requirements be achieved. To realistically adjust US standards to North Korean standards requires an intimate knowledge of the enemy's organization and mode of operations, not just heroic assumptions. In Korea, for example, PW reports, captured documents, aerial photography, and other informational sources eventually supplied a detailed and authentic picture of North Korean and Chinese truck transport systems. In early logistical studies North Korean requirements were arbitrarily assumed to be at the level of certain fixed percentages of US requirements. As the war continued, however, increased and better intelligence permitted more accurate estimates; these estimates were less dependent on US analogies.

US requirements, for many years, for supplying troops have been so sophisticated and detailed that no enemy logistical requirements can begin to meet minimum US supply levels. Currently, for example, the US is furnishing its troops in Vietnam with a large share of total food rations in the form of fresh foods and is shipping more than 9 pounds of post exchange type supplies per man per day. Such post exchange supplies, alone, compare favorably with the enemy requirements for all types of essential goods, shown in Table 1, and reflect differences in standards of US and other military forces.

II. Estimated Requirements

Estimates of the totals of enemy logistical requirements made at various times during the Korean War show considerable uniformity. In fact, a greater

uniformity than the different methodologies and differences in combat conditions justified. In some respects, however, the uniformity of estimates of requirements for Classes I-IV* is misleading because of wide variations in the composition (estimated) of different classes of supply.

As shown in Table 1, Column C, a North Korean division in fairly heavy combat in the Pusan area early in the Korean War required an estimated 50 tons of supply daily, only slightly less than an enemy division in a period of relative inactivity in January 1952, Table 1, Column E. In January 1953, also a period of inactivity, daily requirements were estimated to have increased to 64 tons daily, Column F, largely due to increased enemy artillery and mortar fire even during periods of relative inactivity. Estimates of enemy requirements to support a major offensive in 1953 were much larger, 148 tons daily, Column G. This estimate, however, was based upon less direct evidence and more tenuous assumptions than the estimates of actual expenditures in January 1952 and January 1953. Reduced enemy requirements in the rear areas, shown in Columns H and I, result from lower Class V requirements.

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[redacted] estimates, Column J, of the daily requirements of a Chinese army invading Southeast Asia, are much lower than comparable estimates made during the Korean War because [redacted] assumed that Class II and IV requirements would be exceedingly small and that Chinese forces would encounter much less opposition than in Korean, and thus have lower Class V requirements.

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* Class definitions:

I. Food rations.

II. and IV. Stores, equipment, and vehicles.

III. POL

V. Ammunition.

Variations in the estimates of different classes of supply are especially marked in the estimates of Class V requirements. For example, estimates of Class V requirements varied from 6.0 pounds to 0.2 pounds per man per day. Requirements for a major offensive were estimated at 5.3 pounds per man per day.

Class I requirements, generally, were the easiest to estimate. A wealth of information existed showing that enemy rations totaled between 2 to 3.5 pounds per day. However, it is impossible to explain why Class I requirements, Column E-I, were so high. The original source reported the requirements in total tons per day so that it was necessary to compute per man estimates from OB estimates for January 1952 and January 1953. Although it is almost certain that the same OB information was used in converting total requirements to a per man basis as was used in the original study, the Class I requirements of from 6.9 to 7.2 pounds are high and conflict with the text of the original source. Some upward adjustment may have been made for stockpiling. However, a number of other obvious discrepancies between the text and the tables suggest that some good thinking was abused by sloppy workmanship.

III. Early Logistical Studies

The first estimate of enemy logistical requirements was published by

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[redacted] in February 1951, shown in Column C. The estimate of North Korean Class I requirements was reasonably firm. Considerable information about normal peace-time rations was available from PW reports. Troops in combat were receiving less than

this but they were still receiving an adequate daily ration.

North Korean requirements for Class II, III and Class IV supplies were scaled-down US requirements, the degree of scaling-down being related to an understanding of enemy requirements as gleaned from PW reports. Because combat experience had revealed virtually no instance of shortages of ammunition North Korean Class V requirements were assumed to be the same as US standards.

Daily logistical requirements for each North Korean soldier totaled about 10 pounds, equivalent to about 50 tons for a 10,000 man division. In contrast, US standards required almost 50 pounds per day for each US soldier in the Pacific theater, see Table 1, Columns A and B.

In September 1951, G-2 of the US Eighth Army and A-2 of the US Fifth Air Force published a joint study of the enemy supply and transport system in North Korea, Column D. Class I requirements were estimated at about 2 pounds a day. The report concluded that although enemy PW's frequently complained that rations were inadequate, after a year's combat the ". . . enemy troops were still fighting fanatically and are able to complete long marches and dig industriously whenever they stop . . . prisoners are seldom emaciated." Total POL requirements for both the Chinese and North Korean armies were estimated at 267 short tons per day. Enemy POL requirements were based on estimates of 8,500 enemy vehicles in operation in North Korea, the number of miles these trucks traveled daily, and the gasoline consumed.

POL requirements, estimated in the joint study, amounted to .95 pounds per man per day, and surprisingly, were only slightly less than the 1.08 pounds that earlier had been estimated by 25X1A5a1 [redacted] when a methodology based on scaled-down US standards was used.

Without disclosing the methodology, the joint study states that both Chinese and North Korean divisions require about 30 short tons of " . . . ammunition daily under all conditions." The meaning of ammunition requirements "under all conditions" is unclear although presumably some "average" type of combat situation was intended. Again, the estimate of 30 tons a day is in close agreement with the 25X1A5a1 [redacted] estimate. The daily Class V enemy requirement shown in Column C, based on US standards, is equivalent to 25.5 tons per division per day. It is not clear whether the joint G-2, A-2, estimate made use of the earlier 25X1A5a1 [redacted] study or was based on subsequent US knowledge of the ammunition requirements of the enemy. It was probably still too early in the war for daily shell reports to have provided a good statistical basis for estimating enemy Class V expenditures.

IV. Later Reports -- Increased Sophistication

A study by J-2, Headquarters, Far East Command, published in February 1953 is a far more sophisticated study than other early estimates of Chinese and North Korean logistical requirements. Enemy daily requirements were estimated for the entire year of 1952 as shown below (in short tons):

1 Jan 52	1 Apr 52	1 July 52	1 October 52	1 January 53
2,756	2,893	3,150	3,888	3,826

The growth in enemy requirements throughout 1952 was mainly a function of (1) the increased numbers of Chinese and North Korean divisions at the front and in reserve, (2) increased Class III expenditures resulting from the greater use of trucks to counteract the railroad interdiction program, and (3) a 283 percent increase in Class V expenditures. The increase in Class V expenditures resulted from the increased number of artillery pieces and mortars assigned to enemy units during the year although the battlefront was characterized by relative inactivity throughout the period. Enemy daily requirements for a major offensive, Column G, were estimated on the basis of the experience gained from studying several Chinese "limited offensives".

Enemy logistical requirements were estimated for both forward and rear areas. For both areas the average ration was estimated at 3.5 pounds per soldier. By this time there was a wealth of intelligence reports indicating that the average ration of enemy soldiers had increased from 2.2 in 1951 to 2.5 in 1952 to the estimate of 3.5 pounds daily in January 1953.

Estimates of Class II and IV requirements for January 1953 were increased significantly over January 1952 because it had become clear that enemy troops were better and more adequately equipped and supported than at any previous time during the Korean War. The Class II and IV needs of individual soldiers were estimated at 1.5 pounds per day which was overall about 20 percent of US requirements on a division basis. As a further refinement, enemy requirements per man had to share the materiel combat losses of the front, estimated at 50 tons a day, and losses from the air force strikes in the frontal areas,

estimated at 68 tons daily. It was estimated that in addition to routine division requirements destruction from US air attacks in the rear areas required an additional 207 tons of replacement requirements daily.

The Class III requirements of the enemy were based on estimates of the enemy's truck park, activity levels, and average number of trip-miles. Although estimates of the park of trucks was subject to considerable error a great deal of detailed information had been collected on the mode of the enemy's truck transport in Korea. Extensive statistical compilations were made periodically of sightings of enemy motor vehicles. An analysis of PW reports, captured enemy documents, and aerial photography permitted G-2 of the Eighth Army to put together relatively early in the war a convincing picture of enemy logistical and transportation procedures.

The bulk of enemy Class V expenditures in forward areas consisted of artillery and mortar fire. Studies had been made that showed that 90 percent of all artillery and mortar fire received across the US Eighth Army front was accurately reported in daily shell reports. In addition, enemy anti-aircraft ammunition expenditures, and training requirements were estimated at an additional four tons daily. In the rear areas it was estimated that enemy anti-aircraft fire expended about 85 tons of ammunition daily and that coastal units and training expenditures totaled an additional 16 tons per day.

Estimates of front-line and rear expenditures were adjusted further to reflect losses resulting from UN combat strikes, -- ground artillery, air, navy -- and normal waste and spoilage.

The estimates of enemy requirements at this later stage of the war were based on much firmer factual information than had been available earlier when estimates were based mainly on adjusted US requirements.

Stockpile estimates were made on the basis of enemy requirements and the estimated tonnages of new supplies moving down from Manchuria. The inflow of new supplies took into account the capacity of the MSRs, the effect of the air interdiction campaign, truck and locomotive sightings, and other intelligence reports.

V. Post-Korean War Studies

In 1952 25X1X7 [redacted] published its estimates of the logistical requirements of a Chinese army invading Southeast. Because many of the estimates in the study were based on Korean War experiences a summary of 25X1X7 [redacted] methodology and assumptions are given below; daily requirements are given in Column J.

25X1X7 [redacted] claimed that captured enemy documents during the Korean War showed that each Chinese soldier was supposed to receive a daily ration of 3 pounds. Under most combat experiences, however, 25X1X7 [redacted] report maintained that Chinese soldiers in Korea received considerably lower rations, about 2 pounds or less per man per day, although it was recognized that during the closing stages of the Korean War rations went up considerably, probably to 3.5 pounds.

25X1X7 [redacted] concluded that the Class I requirements of a Chinese Communist Army engaged in military operations in Southeast Asia would be about 2.5 pounds daily and consist of the following (in ounces):

Rice	25.5
Edible Oils	3.0
Vegetables	7.5
	36.0
Plus 10 percent for packaging and wastage	4.0
	40.0 (2.5 pounds)

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[redacted] report recognized the difficulty of estimating Class II and Class IV supplies because such requirements were especially dependent upon the type and duration of combat actions, the extent of interdiction efforts, and the amount of supplies that could be obtained locally. Requirements of Communist forces in Korea had varied widely, ranging from 6 to 13 pounds per man per day. It was assumed that a Chinese army would meet much less opposition in Southeast Asia than in Korea but would travel greater distances. It was concluded that 0.8 pound per man per day would be the minimum requirement.

POL requirements reflected only motor vehicle transport because it was assumed that no tanks, armoured fighting vehicles or self-propelled guns would be used in an invasion of Southeast Asia. In addition, it was assumed that animal-drawn transport would be used only to assist local operations and would not be used on major supply routes. Based on Chinese T/O data it was estimated that a Chinese army contained 1,552 vehicles or one vehicle for every 36 soldiers. Each truck was assumed to travel 25 miles per day and travel 5 miles per gallon of gasoline consumed. Additional allowances were made for oil, lubricants, and waste.

Class V requirements were estimated for (1) a major action, and (2) covering and security actions. Class V estimates were based on the weapons' T/O of a Chinese army and the number of rounds expended daily. Expenditures were based supposedly on PW reports, captured documents, and studies of Chinese tactics, all coming from the Korean War. During a major action Class V were estimated at 1.8 pounds per man per day, in a covering type action it was estimated that 0.5 pounds of ammunition would be needed per man per day.

Table 1

Estimates of Logistical Requirements of Enemy Forces, Korean War

(Pounds per man per day)

Class	A US Standards 1959	B US Standards 1949	C North Korean February 1951	D North Korean and Chinese Sep 51	E Forward Areas January 1952	F Forward Areas January 1953	G Forward Areas North Korean and Chinese Major Offensive	H Rear Area January 1952	I Rear Area January 1953	J Chinese Army Southeast Asia
I (Rations)	6.7	6.7	3.0	2.0	6.9	7.2	7.2	4.2	4.4	2.5
II and IV (Stores)	18.8	18.8	0.8	N.A.	3.5	3.8	16.2	2.8	2.3	0.8
III (POL)	14.0	19.3	1.1	1.0	.2	.1	.9	1.4	1.5	1.2
V (Ammunition)	5.1	5.1	5.1	6.0	.2	1.6	5.3	.3	.3	1.8
Total	44.6	49.9	10.0	9.0	10.8	12.7	29.6	8.7	8.5	6.3
Tons Per 10,000 Man Division Per Day	223	250	50	45	54	64	148	44	43	32

A. US Standards, Pacific Theater, 1959. 1/ Divisional requirements, shown here, are based on a theoretical 10,000 man division in the field, and are not equivalent to a US divisional slice which is the logistical planning term that includes a combat division's share of total support (supplies and personnel) included in the corps and theater levels of planning.

B. US Standards, 1949. 2/ Not a US divisional slice.

C. Estimated North Korean requirements, February 1951. 2/

D. North Korean and Chinese requirements, September 1951. 3/

E-I. North Korean and Chinese requirements, January 1952 and January 1953. 4/ Source gave requirements in total tons by class for all forces engaged in frontal and rear areas. Pounds per day based on OB estimates for January 1952 and 1953. Class I estimates appear excessive and conflict with text.

J. Estimated requirements for a Chinese invasion of Southeast Asia, 1955. 5/ Class V estimates include a lower weight (0.5) for light combat.

SOURCES

1. FM 101-10, February 1959, Staff Officers' Field Manual Organization, Technical and Logistical Data, Part 1, pg. 304. Dept. of the Army. Unclassified.

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2. [redacted]

3. Supply and Transport, CCF-NKPA, Joint Study prepared by G-2 Eighth Army and A-2 Fifth Air Force, 23 September 1951. SECRET

4. Logistical Capability of Communist Forces in Korea to Support a Major Offensive, J-2, Far East Command, 28 February 1953. SECRET.

[redacted]

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TRANSMITTAL SLIP 25X1A9a	DATE 26 April 1966
TO: [redacted]	
ROOM NO. 3 G 39	BUILDING Hqs.
REMARKS:	

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FROM: [redacted]		
ROOM NO. 4 G 32	BUILDING Hqs.	EXTENSION 5911

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